

ABSTRACT

5 A phase change optical recording medium together with methods for
optimally initializing and recording feasible for carrying out
read/write/erase operations at multiple recording velocities ranging from
4.8 m/sec to 30 m/sec. Preferably, a recording layer included in the
recording medium essentially consists of Ag, In, Sb and Te, with the
proportion in atom % of a(Ag): b(In): c(Sb): d(Te), with $0.1 \leq a \leq 7$, $2 \leq b$
 ≤ 10 , $64 \leq c \leq 92$ and $5 \leq d \leq 26$, provided that $a + b + c + d \geq 97$.
10 Initializing the recording medium uses a scanning beam spot from a high
power semiconductor laser having energy density input equal to, or less
than, 1000 J/m^2 , scanning speed of the beam spot in the range of 3.5 m/sec
to 6.5 m/sec⁰, and intensity of laser emission equal to, or greater than 330
mW. Determining an optimum recording power includes at least
calculating a normalized gradient $g(P)$, from the equation $g(P) =$
15 $(m/\Delta m)/(P/\Delta P)$, where ΔP is an infinitesimal change in the vicinity of
recording power P , and Δm is an infinitesimal change in the vicinity of
signal amplitude m .